

Appl. No. : 09/761,532
Filed : January 16, 2001

REMARKS

In response to the Office Action mailed July 26, 2004, Applicant has amended the application as above. No new matter is added by the amendments as discussed below. Applicant respectfully requests the entry of the amendments and reconsideration of the application in view of the amendments and the remarks set forth below.

Discussion of Specification and Drawing Amendments

Figure 5 has been amended to correct the reference character "CHSHION." The specification has been amended to correct informalities pointed out by the Examiner. Thus, the drawing and specification amendments do not introduce any new matter to the application. Applicant respectfully requests the entry of the amendments.

Discussion of Claim Amendments

Claims 1, 5 and 6 have been amended. Claims 1-10 are pending in this application. The amendments to the claims are merely for clarification or conform them to U.S. practice, and do not narrow the scope of protection. Furthermore, no new matter is added by the amendments. Applicant respectfully requests the entry of the amendments.

Discussion of Drawing Objections

The Examiner objected to Figure 5 since in Figure 5 "CHSHION" is used where "CUSHION" may be intended. In reply, Figure 5 has been amended as suggested by the Examiner.

The Examiner objected to Figures 18 and 19 as reference characters "61a-61c," "63a" and "63b" are missing from the specification. In reply, Applicant has deleted the corresponding description describing the above-indicated reference numerals from the specification.

The Examiner objected to Figure 14 as reference characters "41" and "42" are missing from the specification. The Examiner also objected to Figure 15 as reference characters "51" and "52" are missing from the specification. However, the specification discloses the above-indicated reference numerals in paragraph [0050] as shown below (emphasis added). Withdrawal of the objections is respectfully requested.

[0050] As shown in FIGS. 2 and 3, the transmission device is comprised of an emitter 10 and a receiver 5a accommodated In the SW unit 4 and the ECU 5, respectively. The emitter 10 is comprised of a light-emitting element 11 for emitting an optical signal of, e.g., infrared ray, and a board 12 mounted with an emission control circuit for drivingly controlling the light-emitting element 11 in response to a switch signal supplied from a seat switch (not shown) provided in the SW unit 4. The SW unit 4 has a cabinet 41 provided with an emission window 42 of glass, plastic or the like. As shown in FIG. 1, a cabinet 51 of the ECU 5 is formed with a reception window 52 of glass, plastic or the like.

Discussion of Specification Objections

The Examiner objected to the specification because of some informalities. The Examiner states that on page 14, line 23, the term “60mm and 70mm” is used where “70mm and 60mm” may be intended with respect to Figure 4. The Examiner also states that on page 22, lines 14 and 31, the terms “element 1” and “300mm” are used where “element 11” and “50mm” may be intended, respectfully. The Examiner further states that on page 24, line 14, the term “duct” is used where “dust” may be intended. In reply, the corresponding portions of the specification have been amended as suggested by the Examiner.

The Examiner states that in the abstract, line 12, the term “optical-signal” is used where “optical signal” may be intended. In reply, Applicant has amended the abstract accordingly. Withdrawal of the objections is respectfully requested.

Discussion of Claim Objections

The Examiner objected to Claim 5 because of some informalities. The Examiner asserts that the phrase “either or both of upstream sections, extending in the emitter” is unclear. The Examiner also states that “extending in the emitter” is not shown in the figures nor is it clear how upstream sections extend “in the emitter” of the figures. The Examiner further states that antecedent basis for “both of upstream sections” is lacking.

In reply, Applicant has amended the term “either or both of upstream sections” to “either or both of at least two upstream sections.” Figure 8 shows two upstream sections, extending from the emitter (10), of the first and second propagations paths (A, B). Withdrawal of the objection is respectfully requested.

Rejection of Claim under 35 U.S.C. § 112, ¶ 2

The Examiner has rejected Claim 6 under 35 U.S.C. § 112, second paragraph as being indefinite. The Examiner asserts that Claim 6 bases non-faulty optical signal transmission on a ratio between incident intensities of two signals from an emitter, whereas the corresponding specification bases non-faulty optical signal transmission on a ratio between an actual incident intensity and a maximum incident intensity. However, Applicant respectfully submits that Claim 6 is supported by the specification.

The specification describes in connection with one embodiment that first and second optical signals (B1, B2), emitting from the light-emitting element (11) and being reflected by first and second reflection planes (24, 25), are incident into the light-receiving element (21). *See the specification at page 25, line 25 through page 27, line 8, and Figure 10.* For convenience, it is assumed that the incident intensities of the first and second optical signals (B1, B2) are I_1 and I_2 , respectively. As discussed below, the ratio (I_1/I_2) corresponds to the ratio of an actual incident intensity and the maximum incident intensity. Furthermore, the ratio (I_1/I_2) is equal to or higher than a predetermined value as recited in Claim 6. If I_2 is greater than I_1 , the maximum incident intensity is equal to I_2 . If I_2 is blocked or interrupted, the actual incident intensity is equal to I_1 . In this situation, the ratio (I_1/I_2), which is equal to or higher than a predetermined value, corresponds to the ratio of the actual incident intensity and the maximum incident intensity. On the other hand, if I_1 is blocked or interrupted, the actual incident intensity is equal to I_2 . In this situation, the ratio ($I_1/I_2=I_2/I_2=1$), which is equal to or higher than a predetermined value, also corresponds to the ratio of the actual incident intensity and the maximum incident intensity. The same would apply to the situation where I_1 is greater than I_2 . In view of the above, Claim 6 is supported by the specification. Withdrawal of the rejection is respectfully requested.

Rejection of Claims Under 35 U.S.C. § 102(b)

The Examiner has rejected Claims 1-10 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,040,168 to Maue, et al. (hereinafter "Maue"). The Examiner has also rejected Claims 1-9 under 35 U.S.C. § 102(b) as being anticipated by JP 05-344069 to Ieda, et al. (hereinafter "Ieda"). Applicant respectfully traverses the Examiner's claim rejections as discussed below.

Standard of Anticipation

“For a prior art reference to anticipate a claim under 35 U.S.C. § 102, every element of the claimed invention must be identically shown in a single reference.” *Diversitech Corp. v. Century Steps, Inc.*, 850 F.ed 675, 677, 7 USPQ 2d 1315, 1317 (Fed. Cir. 1988).

Discussion of Patentability of Independent Claims over Maue

Independent Claim 1 recites, among other things, that a ratio of an incident intensity, at the receiver, of a second optical signal propagating along the second propagation path to an incident intensity, at the receiver, of a first optical signal propagating along the first propagation path is equal to or higher than a predetermined value at or above which a faulty optical-signal transmission is not caused. Independent Claim 6 has a similar claim term.

Maue does not disclose that the claimed ratio of an incident intensity of the second optical signal (indirect path) to an incident intensity of the first optical signal (direct path) is *equal to or higher than a predetermined value at or above which a faulty optical-signal transmission is not caused*. Maue discloses that optical signals are transmitted via either a direct path (without involving reflection) or an indirect path (involving reflection) between the slave modules (3) and the control module (1) (see Figure 1). However, Maue does not disclose any relationship between the intensity of the signal transmitted via a direct signal path and the intensity of the signal transmitted via an indirect signal path.

In Maue, since the indirect signal can be significantly low in its incident intensity at the receiver, as compared to that of the direct signal, a faulty transmission may be caused (see the specification at page 4, lines 6-14 of this application). Furthermore, in order to avoid faulty transmission, either a higher priced transmission device or a modification of an existing vehicle-mounted apparatus is required. *See the specification, page 5, line 24 through page 6, line 6.*

In contrast, in the claimed invention, the ratio of the incident intensities of the first and second optical signals at the receiver is *equal to or higher than a predetermined value at or above which a faulty optical-signal transmission is not caused*. According to one embodiment of the invention, faulty transmission can be avoided without requiring either a higher priced transmission device or a modification of an existing vehicle-mounted apparatus. In view of the above, the Maue reference does not disclose the above-indicated claim term.

Discussion of Patentability of Independent Claims over Ieda

Ieda does not disclose that the claimed ratio of an incident intensity of the second optical signal (indirect path) to an incident intensity of the first optical signal (direct path) is *equal to or higher than a predetermined value at or above which a faulty optical-signal transmission is not caused*. Ieda discloses that an optical signal is transmitted between a transmission unit (11) and a reception unit (13) where a transmitted signal is reflected from a wall surface (20) when there is an obstacle (19) therebetween. *See the abstract and the representative figure.*

Ieda does not disclose any relationship between the intensity of the signal transmitted via a direct signal path and the intensity of the signal transmitted via an indirect signal path, either. In addition, the Ieda structure can cause similar problems discussed with respect to Maue. Furthermore, the Ieda reference does not disclose that the transmitter and receiver are located inside a vehicle. In contrast, the claimed transmission device is mounted to a vehicle. In view of the above, Ieda does not disclose the above-indicated claim term.

Summary

In summary, the term “a ratio of the incident intensity of the second optical signal to an incident intensity of the first optical signal is equal to or higher than a predetermined value at or above which a faulty optical-signal transmission is not caused” of the claimed invention is disclosed in neither of Maue and Ieda. In view of the above, Claims 1 and 6 are not anticipated by either of the prior art references. Thus, independent Claims 1 and 6 are allowable over the cited references. Claims 2, 4-5, 7, and 9-10 depend from base Claim 1 or 6 and further define additional technical features of the present invention. In view of the patentability of their base claims, and in further view of their additional technical features, all of the above-indicated dependent claims are patentable over the prior art of record.

Discussion of Patentability of Dependent Claims 3 and 8

Each of Claims 3 and 8 recites that the predetermined value is 25%. As discussed above, neither Maue nor Ieda discloses a specific range about an intensity ratio of an indirect signal to a direct signal. Claims 3 and 8 specifically recite a specific ratio range. MPEP 2131.03 states that in order to anticipate the claims, the claimed subject matter must be disclosed in the reference

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with "sufficient specificity to constitute an anticipation under the statute." Applicant respectfully submits that no such sufficient specificity regarding intensity ratio has been disclosed by the prior art references.

The Examiner asserts that both Maue and Ieda disclose an infinity ratio [(unblocked signal/blocked signal)=X/0=undefined]. Applicant respectfully disagrees. The claimed ratio is a ratio of an indirect signal (a second optical signal) from a reflector to a direct signal (a first optical signal) which is opposite to the Examiner's characterization. According to the Examiner's assertion, the ratio of the two signal intensities in the prior art references would be zero (0/X=0). Thus, Applicant respectfully submits that Claims 3 and 8 are particularly allowable over the prior art.

Rejection of Claims under 35 U.S.C. § 103(a)

The Examiner has rejected Claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Ieda in view of U.S. Patent No. 4,596,050 to Rogers. Since at least its base independent Claim 6 is patentable and Rogers does not cure the deficiency of either Maue or Ieda, Claim 10 is allowable over the prior art references.


CONCLUSION

In view of Applicant's amendments to the application and the foregoing remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Respectfully submitted,

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